1. A low cost machine vision apparatus for reducing the cost of conventional machine vision products, their inspection and quality control processes by eliminating the need for personal computers and frame grabbers, said apparatus comprising:

a) a lens for directing reflected light from a standard section of an object upon a sensor array to obtain electronic data in spatial segments representative of said standard section;

b) a low cost controller for obtaining the electronic data representative of said reflected light of said standard section of said array and for obtaining data representative of additional reflections of light in spatial segments from an object;

c) said controller including a digital logic chip for comparing the data obtained from said standard section with the additional reflections in accord with an algorithm and for generating a signal indicative of the results of said comparison.

2. An apparatus as recited in claim 1 in which said apparatus includes an A-D converter for converting the data to digital form and for facilitating said comparison

3. An apparatus as recited in claim 1 in which said additional reflections are taken from a different object for comparing the two objects.

4. An apparatus as recited in claim 1 in which said controller comprises a microcontroller having a first memory for receiving reflected light from a standard section and a second memory for receiving data representative of the additional reflections.

5. An apparatus as recited in claim 1 in which said microcontroller is a digital signal processor.

6. An apparatus as recited in claim 5 in which said controller is programmed to repeatedly obtain additional reflections and to make said comparisons in real time and at high speed.

6. A low cost, optical inspection apparatus for optical surface inspection of an object without the use of a frame grabber and PC , said apparatus comprising:

a) a lens unit for directing reflected light from an acceptable, standard surface of an object upon a sensor array;

b) a low cost comparator connected to said sensor array and having a first memory for receiving and storing signals representative of the magnitude of the light reflected from the acceptable standard surface of the object;

c) said comparator having associated additional memory for receiving from said array signals reflecting the reflecting the magnitude of the light reflected from additional surfaces of the object;

d) said comparator also having a logic unit and a control algorithm for comparing the similarity of the signals of the standard with the signals of the light reflected from additional surfaces of an object and for indicating the results of said comparison.

7. An optical inspection apparatus as recited in claim 6 in which the signals representative of the standard are taken from along a first line on the leading edge of said object.

8 An optical inspection apparatus as recited in claim 6 in said sequential signals are taken from segments on the surface of different objects.

9. An optical inspection apparatus as recited in Claim 6 in which said the results includes identification of a deviation from the acceptable standard surface.

10. An optical inspection apparatus as recited in Claim 6 in which said apparatus has an analog to digital converter for converting said signals to digital information.

11. An apparatus as recited in Claim 6 in which said controller is a Digital Signal Processor.

12. A low cost, real time, digital diagnostic inspection unit for examining an object, said apparatus comprising:

a) a digital identifier having an associated first memory containing a "standard" electronic information representative of the reflected light from spatial segments of an object and a second associated memory containing electronic information representative of reflected light from spatial segments an object to be inspected;

b) said identifier having a logic unit for comparing the electronic information of the object to be inspected with the standard electronic information and for providing an output signal indicative of similarity of the standard with the object.

13. An apparatus as recited in claim 12 in which said standard electronic information is taken from a manufactured part.

14) An apparatus as recited in claim 12 in which said digital identifier comprises a digital signal processor.

15. An apparatus as recited in claim 12 in includes a means for including spectral electronic information of the reflected light.

16. A low cost, optical method for inspecting an object, said method comprising the steps of

a) obtaining digital data representing a spatial distribution of reflected light taken directly from an object and placing same in electronic memory as a standard of comparison;

b) obtaining digital data representing a spatial distribution of reflected light from another surface of an object and placing same in electronic memory;

c) comparing said digital data of said spatial distribution of the standard of comparison with the digital data of reflected light from other surface through a regression algorithm to determine the similarity of reflected light from the segments.

17. A method as recited in claim 16 in which the spatial distribution includes a color distribution.

18. A method as recited in claim 16 in which the spatial distribution comparison includes a full spectrum color comparison.

19. A method as recited in claim 16 in which said comparison is performed by an algorithm in a digital comparator.

20. A low cost, high speed method for surface inspection of plastic, metal, woven and non-woven materials, said method comprising the steps of

a) obtaining digital data representing a spatial distribution of reflected light from a plurality of segments of a line of a material without flaws and placing same in electronic memory as a standard of comparison;

b) obtaining digital data representing a second spatial distribution of reflected light from a plurality of segments along an additional line of material;

c) comparing said spatial distributions of reflected light to determine the similarity of the standard of comparison with the additional line.

21. A method as recited in claim 20 in which a plurality of spatial distributions of reflected light are taken along surface increments of the materials and are compared at high speeds to deterring the conformity of the surface of the material with the standard.

22. A method as recited in claim 20 in which spatial distribution includes information

pertaining to the color of the material.

23. A low cost vision apparatus for detecting a change in conditions, said apparatus comprising:

a) a lens for focusing a spatial distribution of reflected light from a target section representing desired conditions upon a sensor array;

b) a sensor array for receiving said distribution and for generating electronic data representative of said distribution;

c) a comparator for obtaining the electronic data representing the desired conditions and for obtaining electronic data representing subsequent conditions;

d) said comparator containing a logic unit and an algorithm for comparing the desired conditions with the subsequent conditions and for providing a signal indicating the results of the comparison.

24. A vision apparatus as recited in claim 23 in which said vision apparatus is mounted as a safety device adjacent a machine press and the normal condition is one in which a person's appendages are not within an unsafe position on the press.

25. A vision apparatus as recited in claim 23 in which said vision apparatus is mounted as a security device adjacent an area to be monitored against unauthorized entry and the normal condition is one in which a person is not within the desired conditions.